

Work Order ID 123965

September-04-14 11:54:19 AM

123965

Page 1

Item ID: D6005-128 *SLT PB* Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Crosstube Material
 Start Date: 9/04/14 Start Qty: 28.00 ***28*** Cust Item ID:
 Required Date: 12/15/15 Req'd Qty: 28.00 ***28*** Customer:
 Reference:

Approvals: Process Plan: MLJ Date: 14-09-04 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D6005	B

100 PURCHASING 0.00

100

Purchasing

Purchasing

PURCHASING

Memo

Issue P/O: 25798

a) Extrude as per Dwg D6005 length = 128" (Ref. D6005-128)

b) Material: 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11))
 Seamless aluminum tube

c) Minimum ultimate tensile strength = 77ksi

d) Minimum tensile yield strength = 66ksi

Ensure material certification is attached

***EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE
 SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH
 AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS,
 OR DENTS.***

MUST BE WELL PACKAGE, IF NOT IT WILL BE REFUSE

CX 14/09/16 28

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐
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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
110	Receive & Insp for Damage & Mat'l Certs	0.00							
110									
Packaging	Memo	0.00							
Packaging	Ensure material certification is attached								
120	QC6- Inspect dimensions to drawing	0.00							
120									
QC	Memo	0.00							
Quality Control	Ensure Material certification comply to Dwg D6005								
130	Chemical Conversion Coat per QSI005 4.1	0.00							
130									
HandFinish	Memo	0.00							
Hand Finishing									

16 _____ 15/10/23 sil _____

16

DAS
38
9-89

NOV 02 2015

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140	QC7-Inspect Chemical Conversion Coat	0.00							
140									
QC	Memo	0.00							
Quality Control									
150	Identify as per dwg & Stock Location: <u>LG003</u>	0.00							
150									
Packaging	Memo	0.00							
Packaging									
160	QC21- Final Inspection - Work Order Release	0.00							
160									
QC	Memo	0.00							
Quality Control									

MLV NOV 03 2015

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

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Process ☐									
Supplier ☐									
Training ☐									
Transport ☐									
Unapproved ☐									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Picklist Print

September-04-14 11:54:22 AM

Page 1

Work Order ID: 123965

123965

Parent Item: D6005-128

D6005-128

Parent Item Name: Crosstube Material

Start Date: 9/04/14

Required Date: 12/15/15

Start Qty: 28.00

Required Qty: 28.00

Comments: IPP Rev:C04.06.15 Added tolerance to Step 2KJ/JLM
IPP Rev:D 08-09-23 fixe typo in dwg name DD verified by:EC IPP Rev:E
13.03.11 per dwg rev.b DD verified by:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6005-128P		Purchased		No			Each	0.0000		28			
D6005-128P													
Crosstube Material													

** (6) ^{DAS}
6
~~3.99~~

NOV 03 2015

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

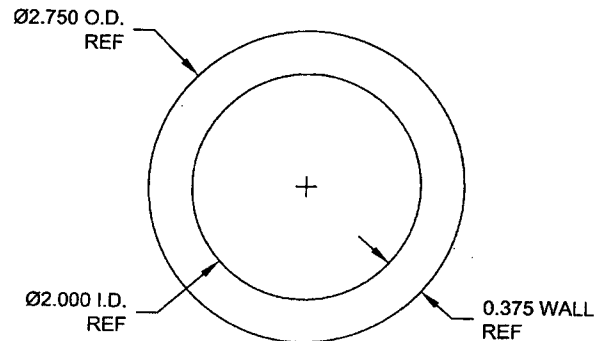
QA Closed: _____ Date: _____

Work Order update only ☐

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FAULT CATEGORY				
Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other	

SPECIFICATION CONTROL DRAWING



NOTES

- 1) D6005-XXX CROSSTUBE
LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 128" LONG TUBE: D6005-128

- 2) MATERIAL: 2.750 OD x 0.375 WALL 7075-T6/T6511 SEAMLESS ALUMINUM TUBE.
PER ASTM B210 OR WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi

- 3) TOLERANCES ARE AS FOLLOWS:
O.D.: ± 0.008 MEAN (± 0.012 INCLUDING OVALITY)
WALL: ± 0.015 MEAN (± 0.038 INCLUDING ECCENTRICITY)
LENGTH: XXX $\pm 0.125/-0.000$
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH

- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

SHOP COPY
RETURN TO
ENGINEERING
IN CONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

123965 M5

140904

RELEASED
13/2/7
PFR ECU 15-587

B	O.D. TOL. NOW 0.008 WAS 0.006, ADD ASTM B210	CP	12.10.29
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	12.10.29		

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. REV. B
D6005 SHEET 1 OF 1
TITLE SCALE
CROSSTUBE MATERIAL NTS

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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO25798

Purchase Order Date 9/16/2014

PO Print Date 9/23/2014

Page Number 4 of 5

Order From :

VU-ALU001

Ship To : DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

ALUMINIUMWERK UNNA AG
630 3033 SOUTH PARKER RD
AURORA, CO 80014
USA

Contact Name

Vendor Phone 303 755 5672

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Terms

Wire

Currency

USD

FOB

DDP - (Delivered Duty Paid)

Ship To Contact

Ship To Phone

Ship Via:

Contract Shipping

Ship Acct:

10 D6005-128P

Crosstube Material

12/15/2015

Yes

12/15/2015

25.00
Each

Line Total: \$17,545.00

\$523.00 \$14,644.00

EXTRUDE AS PER DWG D6005-128 REV. B
B123965

11 D6006-129P

Crosstube Material

12/15/2015

Yes

12/15/2015

20.00
Each

Line Total: \$14,644.00

\$1,002.00 \$20,040.00

EXTRUDE AS PER DWG D6006-129 REV. A
B123969

12 D6009-129P

Crosstube Material

12/15/2015

Yes

12/15/2015

20.00
Each

Line Total: \$20,040.00

\$1,254.00 \$25,080.00

EXTRUDE AS PER DWG D6009-129 REV. A
B123974

Note:

9/23/2014

Packinglist ALUnna AG

ALUnna ref. no.	54642/1000
Customer PO.	P.O. 25798
Date:	09.25.15

Boxmarking:

Dart Aerospace, P.O. 25798
D6005-128, Made in Germany
Dest.: Hawkesbury Ont, Canada

We hereby declare that the wooden packing material are totally free from bark and apparently

free from live plant pests

[illegible]

Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1- DIN EN 10204:2005

Kunde: Dart Aerospace Ltd.
Client:

1270 Aberdeen Street
K6A1K7 Hawkesbury, ON Canada

Zeugnisnummer: 1419/15

Cert No. / No. du certificat:

Bestellnummer: PO25798

Order No. / No. de commande

Auftrag: 54642/1000

Our Reference/Notre Reference:

Produkt: Rohre nahtlos gepresst

Product / Produit: Tubes seamless extruded

Spezifikation: AMS - QQ - A - 200/11; -

Specification:

Werkstoff: 7075

Alloy/Alliage:

Zustand: T 6511

Temper/État

Abmessung: 2,750 INCH x 2,000 INCH x 0,375 INCH x 128,000 INCH

Size / Dimension: D6005-128

Kennzeichnung: CERT.NO. 1419/15 - ALUnna - 7075 - T6511 - CAST NO. ... - AMS - QQ - A - 200/11 - 2.750"OD X 0.375"WALL - HEAT LOT NO.

Marking/Marquage: 1402572 - ALUNNA ORDER CONF. NO. 54642/1000 - 1 - P.O. 25798

Lieferung

Delivered Material / Matériel délivré:

pcs.

lbs

Country of Manufacture: Germany

16

582

Products are in accordance with applicable RoHS

1. Chemische Analyse

Chemical Analysis / analyse chimique

Charge/ min. Cast No. max.	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni	Na
	0,40	0,50	2,0	0,30	2,9	0,28	6,1	0,20						
7221/12	0,101	0,181	1,459	0,053	2,393	0,218	5,940	0,044	0,004	0,0288	0,0001	0,0015	0,0055	0,0001

Hydrogen content: 0,09

ccm/100 g Al Elements without indication < 0,01 %

country of melt manufacturer: Germany

1712/14	0,106	0,176	1,636	0,061	2,505	0,215	5,913	0,037	0,003	0,0297	0,0001	0,0018	0,0063	0,0005
---------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------	--------	--------	--------	--------

Hydrogen content: 0,10

ccm/100 g Al Elements without indication < 0,01 %

country of melt manufacturer: Germany

2. Mechanische Eigenschaften

Mechanical Properties / Valeurs Mécaniques

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Cast/Heat/ pcs.
	81,0	73,0	7,0			
1	86,710	79,460	9,0			1712/1402572/10
2	84,390	76,270	10,0			
3	85,405	77,430	8,0			7221/1402572/6

RMS: outside 25 - max. 11,1 µ"

Ergebnis der Prüfungen:

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

Test results:

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

Resultats:

Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

mergardtri



Certified acc. DIN EN ISO 9001:2008 and DIN EN 9100:2009

valid until 2016-11-10

Cert. - Req. No.: 001959 QM08; 001959 ASH 09-1



ALUnna

Abnahmebeauftragter

29.09.2015

Aluminiumwerk Unna AG, Uelzener Weg 36, 59425 Unna, Germany

Aluminiumwerk Unna AG · Uelzener Weg 36 · D-59425 Unna

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ONT, K6A1K7
Canada

Aluminiumwerk Unna AG

Uelzener Weg 36 · D-59425 Unna

Postfach 11 46 · D-59401

fon +49 (0) 23 03-206 - 0

fax +49 (0) 23 03-206- 116

info@alunnatubes.com

www.alunnatubes.com

page: 1

date: 30.09.2015

customer: 40980

delivery note 90252

your PO dated: 16.09.2014
your PO No.: PO25798
confirmation No.: 54642

contact: Petra Eisenblätter
Tel.: +(303) 755 5672
Fax: +(303) 755 5936
representative: CLAUS J. BETTER

CARRIER: Senator International

your VAT No.:

AWU VAT No.: DE177869055

Country of origin: Germany

We supply acc. to our delivery terms and conditions:

item	quantity	unit	net kgs
1000	16,000	PC	15102358

AWU article: 36744 / Tariff no. 76082081

Customer article: D6005-128 2.750 X 0.375 X 128 / cust. drwg.

product: Tubes X seamless extruded / EN AW-7075 / round

condition: T 6511 / AMS-QQ-A-200/11(A)

outer diameter: 2,750 INCH Tol: +0,012 -0,012

tol. for mean OD +0,006 -0,006

inner diameter: 2,000 INCH

wall thickness: 0,375 INCH Tol: +0,038 -0,038

fixed length 128,000 INCH Tol: +0,125

test report acc. to EN 10204/3.1 / RM 531 / Rp0,2: 455

straightness 0,01 INCH / 1 FEET / RMS max.: outer 25

tol. on quantity +10 % -10 % / scurfed

2.750" OD 0.375" Wall, 128" lengths

Part Number D6005-128 crosstube

Surface Finish max. RMS 25

Tolerances per ASTM B210 / your drawing D6005

Tubes protected with corrosion protective oil

Tubes line marked

Commerzbank AG, Unna

Konto-Nr. 102 56 00 - BLZ 443 400 37

BIC/S.W.I.F.T. - Code: COBADE FF 443

IBAN: DE 90 4434 0037 01025600 00

Sitz der Gesellschaft: Unna

Amtsgericht Hamm, HRB 3045

EXTRUSION INSPECTION SHEET



		SIDE A		SIDE B		Measurement unit		Inches		Symbol		"		ULTRA SONIC MEASUREMENTS			
TUBE #	TOTAL LENGTH	DIA		DIA		INSIDE DIA	wall thickness measured w/vern		Strightness at 12" in middle	Rockwell Reading	LOCATION on tube	R1	R2	R3	R4		
DWG										N/A	Middle	N/A					
1	128"	2.752	2.764	2.746	2.744	1.991	.1359	.396	.00530	N/A	Middle	.386	.388	.375	.373		
2	128"	2.770	2.755	2.746	2.751	1.992	.1367	.389	.0049	N/A	Middle	.391	.383	.370	.383		
3	128"	2.747	2.765	2.753	2.752	1.993	.1386	.372	.0086	N/A	Middle	.376	.380	.370	.381		
4	128"	2.743	2.756	2.744	2.743	1.991	.1384	.369	.0050	N/A	Middle	.385	.370	.376	.387		
5	128"	2.748	2.747	2.744	2.745	1.989	.1389	.365	.0045	N/A	Middle	.382	.385	.379	.377		
6										N/A	Middle						
7										N/A	Middle						
8										N/A	Middle						
9										N/A	Middle						
10										N/A	Middle						
11										N/A	Middle						
12										N/A	Middle						
13										N/A	Middle						
14										N/A	Middle						
15										N/A	Middle						
16										N/A	Middle						
PART #		6005-128				P/O#		25798		BATCH #		123965		Notes:			